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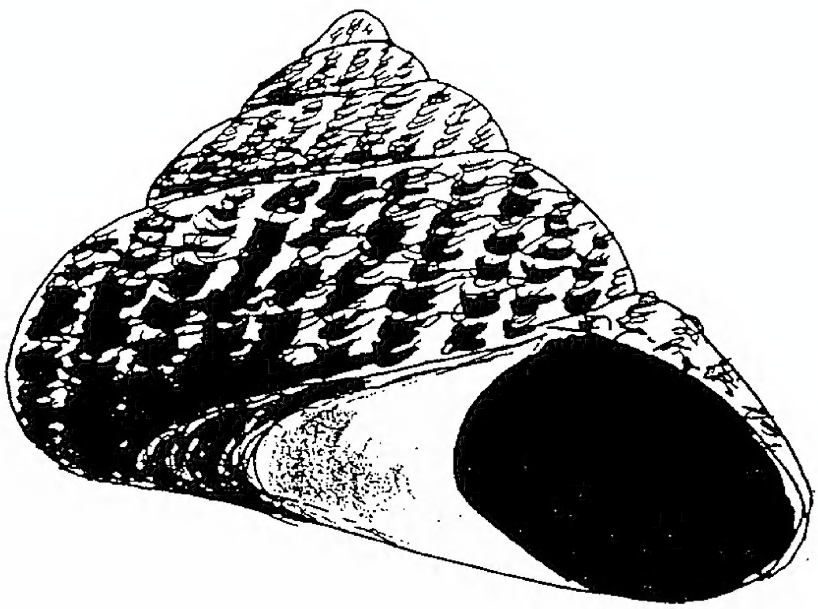

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FAST FERRY DAMAGE TO MARINE LIFE IN TORY CHANNEL – FEBRUARY 2000

By Don Watson

I have enjoyed about twenty-four years of holidaying in the Queen Charlotte Sounds. My wife Pat and I used to hire a dinghy with a Seagull outboard from Waikawa Bay, then travel down the sounds to Tory Channel for the day. We never had any trouble with the ferries, as long as we weren't going ashore when the ferry wake came along. The wake from the rail ferries was a moderate swell, which washed into shore and back into the water of the channel but did not shift the stones up onto the high tide line with it. Because the rail ferries were not doing many trips a day, the sea had time to clear the water which had been silted up, so the shell life settled down again. The fast ferries are now damaging the Tory Channel shoreline by washing the banks is exposed on each side of the channel. There are three kinds of paua that live in this area - *Haliotis australis*, *H. iris*, and *H. virginea*. The latter is only a very small species, with a foot unlike the black one which *H. iris* has, and the shell only grows to about 60 mm. Lots of bays along Tory Channel have a muddy bottom into the shore and then, at low tide, a strip of flat stones , anywhere from 200 mm to a metre long, which is where *Haliotis virginea* lives. This year, February 2000, when we visited these areas, a great mass of these stones was flung right up on the high tide line under the bank. Hundreds of shells had been flung up like this. I snorkelled along the edge, trying to find if they were living there like they used to be but I could not find any living ones. The wave action is too vicious, the ground swells turning over the large flat stones where these paua live, so the only place they could now live would be between the seaweed and the shoreline where the rocks are larger and are not moved by the wave action.

The Circular Saw shell, *Astraea heliotropium*, is a special species found only in New Zealand. It was discovered on Captain Cook's visit to Queen Charlotte Sound when he anchored at Ship's Cove in 1769. The expedition's artist made sketches of these shells, which are magnificent and a very important record for New Zealand history. In 1994, on a small beach in Tory Channel next to Deep Bay, I counted 70 to 80 shells of this species which were lying on the high tide line. A lot of them had been lying there for many years because the outer crust of the shells was breaking down. Also I could see live ones living in among the stones below low tide. This year, February 2000, a lot of flat stones were washed up on the high tide level. I snorkelled in the low tide zone to see if any live ones were living there, but it was the same story, not a live one in sight. The fast ferry washes are just too big for them to survive there.

Another incident - February 1996. Further up in Queen Charlotte Sound in a bay known as Green Bay, a friend of mine said there was an unusual wash of the paua *Haliotis virginea* on the high tide line. He collected about 60 specimens still with their creamy white body in the shell. He said it had to be related to the washes from the fast ferries. So, overall, there must be a lot of paua getting wiped out.

But the biggest danger that I see is that a family with young children in a small boat or an aluminium dinghy will be tipped over by the swells from the ferries. If they aren't wearing life jackets then they are surely going to drown because the ferry washes silt up the water so much that a would-be rescuer would not be able to find anyone underneath the water, even by snorkelling. In

my mind there has to be something done about these fast ferries. Why should they be allowed to damage the marine life of the sounds, let alone erode the shore line and adjoining banks? It will be interesting to watch what lessening effect the proposed speed restrictions may have?

-oOo-

Editorial comment:

In a recent issue of the *New Zealand Marine News* (Vol. 28, No. 4, 2000), the magazine of the New Zealand Ship and Marine Society Inc., there is a most informative (and singularly unbiased and factual) account of the fast ferry wash in the Marlborough Sounds written by the Wellington Harbourmaster, Captain Mike Pryce. He details the various vessels involved (e.g. "*Condor Vitesse* was generally reckoned to be causing the largest wash effect, probably because she operates stern-heavy, which is known to create more wash than normal ..."). He states that in the summer months there can be as many as 18 sailings daily from Picton. A following article entitled "Faster fast ferries?" similarly pulls no punches on this topic. So if anyone doubts that this is still purely imagination or uninformed emotion, Captain Pryce's "no frills" reports surely show that technology and economic growth are not on the side of the marine inhabitants of the shores of Tory Channel!

-oOo-

STOP PRESS !

The *Dominion*, the Wellington region's morning paper, of Monday 18 December 2000 carried the following hot news on page 3 for those interested in the effects of the wakes of the fast ferries in Tory Channel ...

"*Sounds' new ferry-speed bylaw wins praise.*

Marlborough District Council has won praise from Save the Sounds for introducing a bylaw limiting the speed fast ferries can sail through the Marlborough Sounds to 18 knots (33kmh). Save the Sounds spokesman Peter Beech said yesterday that the organisation was thrilled with the bylaw and congratulated the council ... the bylaw ... took effect at midnight on Friday. Tranz Rail last week tested its new Lynx fast ferry at 25- and 27-knots in Tory Channel and is evaluating the results before deciding whether to apply to the council for an exemption to the bylaw ..."

-oOo-

MARFELL'S BEACH: CLIFFORD BAY, MARLBOROUGH

By O.J. Marston

Tonight's copy of the *Marlborough Express*, 13 September 2000, contains an article headed "Coastal marine farm worries Tranz Rail" - so I am recording my memories of Marfell's Beach before it could become as adversely affected by ferry wash as Tory Channel. When our family moved to Seddon in 1951, Marfell's Beach was, of course, for us only about 12 miles away, just next to the solar salt works which had been built just after World War II during which time New Zealand could no longer import its normal supplies of salt and ready grown mustard.

West coast of the South Island beaches are subject to such heavy surf that few shells survive on that coast. Tahunanui and Picton and Waikawa gave me different species as a child, but Marfell's Beach was quite remarkable: it had prodigious quantities of huge *Argobuccinum pustulosum tumidum* (the pustulose form less common than the smooth), heavy and huge specimens of *Penion sulcatus* (more of the *mandarina* form than the knobbed *adustus* form), and, to my utter astonishment, even huge *Cabestana spengleri*, which I admired in Powell's 1937 *Shellfish of New Zealand* but had assumed lived only north of the Bay of Islands. Over the past 55 years *Cabestana spengleri* has proved to be erratic there, so, perhaps they do not breed there but rely on the occasional spatfall. I had found them just inside the east entrance to Tory Channel at Moioio Island.

Readers who are not Wellingtonians may not realise that for financial and local reasons Tranz Rail long ago purchased a huge area of flat land between the Lake Grassmere salt works and Marfell's Beach to the east. A new interisland ferry terminal complex built there would greatly reduce travelling time, therefore fuel costs, between Wellington and a Clifford Bay terminal, and train waggons and rail haulage transporters would also avoid Picton and Blenheim and be an hour closer to Christchurch and Dunedin. The Picton freezing works has already moved out closer to Clifford Bay. Picton and Tory Channel would largely, or even totally, be by-passed by both the fast ferries and the rail-track heavy ferries, and instead the relatively shallow Clifford Bay seafloor would get churned up instead, with ferries turning and reversing. Enormous sheltering breakwaters would have to be built out into Clifford Bay. Marfell's Beach could be subject to greater flotsam and jetsam as well as the risk of partial oil spills washed off the rail decks as droppings from diesel haulage vehicles.

Tranz Rail was granted resource consent in 1999, with a 6 year limit in which to act. The current confrontation over the new speed limit of 18 knots within Tory Channel will affect both Tranz Rail and rival companies with their fast ferries, and may see the demise of all the fast ferry services. The Clifford Bay terminal is still in the balance, and for Tranz Rail another major problem has arisen.

Clifford Bay Marine Farms Company has now applied for resource consent to establish a 1085.5 hectare marine farm to the north of Tranz Rail's proposed terminal, plus a 276.6 hectare marine farm on the other side of it. Their application is for "a restricted coastal

activity", which, to quote the *Marlborough Express*, means "restricting public access to that part of the coastline".

The Director-General of the Department of Conservation, and Tranz Rail, are just two of the prominent opposers out of the 38 oppositions to that application. Should the Clifford Bay Marine Farms Company's application be successful, the company will then build the biggest mussel farm in the whole of New Zealand . "Restricting public access to the Coastline" could even , perhaps, affect access to Marfell's Beach and the camping ground where the toilet septic tanks drain seawards.

Even 10 years ago Dr Dennis Gordon of NIWA addressed our club about the invasion of foreign bryozoans appearing in our coastal waters, and then published a significant research paper on these invaders using ships' hulls. The current algal bloom problem has caused Tranz Rail to state publicly that they will not take on infected sea water as ballast from Wellington Harbour, and then discharge it on the Picton side of Cook Strait. Other shipping companies may not be so considerate. We all know how our New Zealand molluscs *Amaurochiton glaucus* and *Maoricolpus roseus roseus* have appeared in Hobart's Derwent estuary; they would have to have been carried by shipping as that is against the northerly winds and currents (although the importation of New Zealand oysters is generally regarded as the cause).

THEORETICAL HABITAT AREAS OF CLIFFORD BAY

A. Main beach - From sand dunes at the west end to rocks at the east end. Few molluscs live in this zone, except on some rocks exposed at extreme low water. The local rock and mineral club once bashed open sundry rocks there so I followed behind them rescuing live chitons and other species. The beach is largely made up of grades of shingle or coarse
sand which vary according to the most recent storms.

B. Offshore - From the species cast ashore, I imagine that Clifford Bay opposite Marfell's Beach is something like this:

(1). Vast platforms of papa rock extending underwater from the papa rocks exposed at the east. Usually the commonest shells on ther beach are huge *Barnea* (*Anchomasa*) *similis*, rarely *Pholodidea suteri*, which actually bore into the papa rock. *Hiatella arctica* and *Irus* (*Notirus*) *reflexus* are common, and the rare *Irus* (*Notopaphia*) *elegans*, all appear to live in the mudstone rock, but only in the cavities drilled by the first two species. Hiding in large crevices, or under ledges adjacent to mud or sand, would live the large, heavy gastropods for which Marfell's Beach is noted: *Argobuccinum, Cookia. Turbo, Penion sulcatus*, rarely *Modelia granosa* and *Cabestana spengleri*.

(2.) Lenses or pockets of mud or coarse sand between the papa blocks would support those species which specialise in such niche habitats - *Protothaca crassicosta* in particular, plus *Ruditapes largillierti, Pseudarcopagia disculus, Venericardia purpurata, Gari stangeri* (which ranges from silt to coarse gravel) and their predators *Cominella*

adspersa and *C. maculosa*. These bivalves normally reach no more than 50 mm in length. It may be that in these mud pockets between the rocks the dwarf *Panopea zelandica* are trying to exist. Since 1963 I have been conscious of these 48 mm *P. zelandica* and dwarf *P. smithae* being cast ashore. The shells are thick and heavy, and obviously adult, not at all like healthy *Panopea* juveniles which at 48 mm are light-weight and semi-translucent. Another dwarf and misshapen bivalve sometimes cast ashore is *Atrina pectinata zelandica*. At 100 mm they are crescent or scimitar shaped, not straight sided. In Croixelles Harbour *Atrina* reaches 450 mm, but from sheltered, deep mud habitat.

(3). I visualise that further out, perhaps a mile, the papa reefs and their pockets of sand/mud give way to broken down papa rock plus clay carried out to sea by the Awatere River. *Penion* could still be there, plus the smooth *swainsoni* form of *Alcithoe arabica*. They would not be there without their prey, which could include *Ruditapes largillierti* and *Gari stangeri*. The volutes I've noted do not have the curious flattened fasciolar plate which we associate with volutes from shallower waters, such as between Kapiti Island and Waikanae, which is why I've included them in this group. The thought is that perhaps the fasciolar plate gives some anchorage to the shells if the water becomes turbulent. In this much deeper area, with a greater depth of mud bottom too, probably *Panopea smithae* is living successfully. Solid shells, but normal in shape, and up to 85 mm, can wash ashore, still in pairs. *Globisinum drewi* has been trawled off Banks Peninsula at 50 fathoms, but, on the other hand, Don Watson has collected live ones as a scuba diver, so obviously this species can be found at a great range of depths as long as the sea floor mud suits it by supplying small bivalves as prey.

(4). Clifford Bay outer limits? Possibly the commercial fishermen have some means of deciding where Clifford Bay ends and Cloudy Bay begins. The Awatere River brings down largely papa clay, but the Wairau degrades rock which gives coarse sand and gravel. Trawlers keep well out into Cloudy Bay, trawling for bottom fish, but have learnt to bring in "surf clams" to sell (i.e. both *Mactra* species). An unwelcome haul means striking a colony of *Alcithoe calva*, or *A. larochei*, or *Semicassis pyrum* (named orginally a subspecies *hamiltoni* by Powell in 1928 from 60 fathoms off Cape Campbell), or, yet further out, huge *Penion ormesi*. From Marfell's Beach viewpoint, there must be some areas of sand where *Mactra ovata*, *M. murchisoni*, *Oxyperas elongata*, *Spisula aequilatera*, and *Paphies donacina* are able to live, yet to wash ashore in good condition as pairs. Over the years I have recorded one *Penion ormesi*, one *Alcithoe larochei*, and one *Fusitriton magellanicus laudandus*, all probably stirred up by the dredging trawlers. From the fact that I have samples, I assume that on occasions other people must, similarly, stumble across specimens too, and yet other specimens must appear there, but never be collected.

(5). Rocks to Karaka Pa Point - Except a low tide the rocky area is a barrier to reaching the Karaka Pa Point. The pa was eliminated in the 1828 raids, but argillite weapons still wash out at times on the beach. The karaka trees are also long departed, but the names hang on. The papa rocks are highly acceptable to the various species of *Cellana*. *Cellana flava* is usually sought after by collectors, although clean specimens of *C. ornata* from here look very beautiful. My greatest prize 10 years ago was *Cellana redimiculum*, the

so-called "Otago limpet", which has hitherto had Kaikoura Peninsula recorded as the extreme northern limit of its range. However, we all also know how our so-called "Wellington limpet" *Cellana denticulata* (common at Marfell's Beach) occurs as far north as Cape Maria van Diemen and the Three Kings islands as they are promontories which apparently catch the veligers floating past. The non papa rocks are a problem, the rocks which break down to create the gravel beach. They are so crumbly that they give no stability to molluscs when higher up. At and below low tide levels the permanent seaweed areas contrive to form a mat, which gives shelter to *Calliostoma*, *Turbo*, *Buccinulum*, *Haustrum*, and juveniles only of *Penion sulcatus* and *Argobuccinum*.

Karaka Pa Point is where swirling currents meet, so normally it is a good spot to search for wash-ups, especially of the deeper water species such as *Penion ormesi* and so on. The grass hillsides look dry and desolate, yet for many years they have supported a struggling colony of *Therasia thaisa*, without a shrub in sight. Slightly more surprising still is that the foreign *Oxychilus draparnaudi* has somehow got there. *Helix aspersa* is back at the camping ground.

Two species from the rocky area look the most uninteresting at Marfell's Beach, yet are actually the most fascinating:

1 - *Paratrophon patens*. At first glance in the field this could be mistaken for its fellow muricid *Lepsithais lacunosus*, but the aperture makes it obvious. Its main interest relates to the *Paratrophon* distribution pattern: (a) - i. *P. quoyi* (Reeve, 1846) - from Castlepoint around North Cape to Ahipara (near Kaitaia); ii. *P. cheesemani cheesemani* (Hutton, 1882) - west of Auckland city (Piha) south to Kawhia; iii. *P. cheesemani exsculptus* Powell, 1933, south of Port Waikato to Castlecliff (Wanganui).; iv. *P. patens* (Hombron & Jacquinot, 1854). Powell (1979: 178) records *patens* as "West Nelson down to Stewart Island, and up east coast of Otago to at least Timaru, on exposed rocky shores." The extensive sandy shores south from Wanganui to Paekakariki, likewise north and south Canterbury shorelines (except for Banks Peninsula), leave a huge gap in the distribution of this rock-dwelling shell. "West Nelson" is singularly imprecise, but it still leaves a large gap in distribution south of Wanganui. I have not personally collected them north of Kohaihai and the Heaphy River, not in West Nelson. In 1954, our then club President, Mr W.J. Paul, told us that a *Paratrophon* had been found at the Paekakariki rocks; "undoubtedly *exsculptus*," he said, "in terms of distribution." I later found an imperfect specimen, and accepted his verdict too. Although I have not noticed *P. patens* at Kahurangi Point, Anatori, Paturau, Whararikí, they could be there. I have noted *Lepsiella albomarginata* though. Whatever "West Nelson" may mean, there's still a huge gap from there to Timaru. I can, however, record two live-taken *P. patens* from the northern end of Clifford Bay (Whites Bay) and one live one from Marfell's Beach rocks.

That now raises the question of needing a search between the Paekakariki rocks and Pukerua Bay and perhaps Makara. With enough people watching out, something must turn up. On long camping and tramping expeditions there is a tendency to overlook species that may be regarded as "too common."

2 - *Margarella antipoda puysegurensis* Powell, 1939. These blackish 3 mm trochids were collected on 10 November 1973 by Ian Payton and me at Mussel Rock, Okuru, south of Haast, and, of course, remained unidentified until, fortunately, I showed them to Bruce Marshall at Te Papa. Haast is not impossibly far north of Puysegur Point (at the southwest corner of the South Island) but I was astonished when Bruce Marshall told me that he'd recorded them from Marfell's Beach too, the diametrically opposite end of the South Island. Powell's opinion (1979: 51) was that the New Zealand range of *Margarella* is from the Subantarctic "to north Otago, but apparently not north of there" (except for *M. fulminata* at the Chathams). If one of the factors influencing its distribution is freezingly-cold water, then Clifford Bay at Cape Campbell certainly meets that requirement.

A long trip out to the Cape Campbell lighthouse is again called for, as distinct from just working along Marfell's Beach. At the Cape I would expect to find even more signs of *Cellana strigilis redimiculum*, *Margarella antipoda puysegurensis*, *Paratrophon patens*, and perhaps even the tiny chiton *Plaxiphora boydeni* Murdoch, 1982, and the fissurellid *Montfortula rugosa* (Quoy & Gaimard, 1834).

This is only a somewhat hurried article about Marfell's Beach. I have not been able to check entries in *Cookia* and other sources to include other people's records which could be of species additional to the ones I list here, and even my own records are not complete, but the following can be regarded as my "introductory" list from Marfell's Beach/Cape Campbell, Clifford Bay, Marlborough, in "pre-ferry terminal" times.

Key: C common; Vc, very common; UC, uncommon; R, rare; VR, very rare.

AMPHINEURA/POLYPLACOPHORA

Chitonidae

Chiton (*Amaurochiton*) *glaucus* Gray, 1828	UC

Acanthochitonidae

Sypharochiton pelliserpentis (Quoy & Gaimard, 1835)	UC
Cryptoconchus porosus (Burrow, 1815)	UC

GASTROPODA

Nacellidae

Cellana denticulata (Martyn, 1784)	Vc
Cellana flava (Hutton, 1873)	UC
Cellana ornata (Dillwyn, 1817)	UC
Cellana radians (Gmelin, 1791)	C
Cellana radians [form *earlii* (Reeve, 1855)]	UC
Cellana radians [*perana* (Iredale, 1915)]	C

Cellana stellifera (Gmelin, 1791)	UC
Cellana strigilis redimiculum (Reeve, 1854)	R

Lottiidae

Atalacmea fragilis (Sowerby, 1823)	R
Notoacmea helmsi (E.A. Smith, 1894)	R
[but clean-water *virescens* form of Oliver]	
Notoacmea parviconoidea (Suter, 1907)	UC
Notoacmea scopulina Oliver, 1926	UC
Radiacmea inconspicua (Gray, 1843)	UC

Haliotidae

Haliotis iris Gmelin, 1791	UC
Haliotis australis Gmelin, 1791	UC
Haliotis virginea Gmelin, 1791	R

Fissurellidae

Scutus antipodes Montfort, 1810	UC

Trochidae

Cantharidus opalus opalus (Martyn, 1784)	C
Cantharidus purpureus (Gmelin, 1791)	C
Margarella antipoda puysegurensis Powell, 1939	R
Melagraphia aethiops (Gmelin, 1791)	UC
Trochus tiaratus Quoy & Gaimard, 1834	UC
Trochus viridis Gmelin, 1791	UC
Calliostoma (*Maurea*) *pellucidum* (Valenciennes, 1846)	UC
Calliostoma (*Maurea*) *punctulatum* (Martyn, 1784)	C
Calliostoma (*Maurea*) *tigris* (Gmelin, 1791)	R

Turbinidae

Astraea heliotropium (Martyn, 1784)	R
Cookia sulcata (Gmelin, 1791)	C
Modelia granosa (Martyn, 1784)	UC
Turbo smaragdus Gmelin, 1791	C

Turritellidae

Maoricolpus roseus roseus (Quoy & Gaimard, 1834)	Vc

Littorinidae

Nodilittorina cincta (Quoy & Gaimard, 1833)	UC
Nodilittorina antipodum (Philippi, 1847)	Vc
Risellopsis varia (Hutton, 1873)	UC

Calyptraeidae

Sigapatella novaezelandiae (Lesson, 1831)	Vc

Naticidae

Tanea zelandica (Quoy & Gaimard, 1832] [two albino specimens]	UC
Globisinum drewi (Murdoch, 1899)	R

Ranellidae

Argobuccinum pustulosum tumidum (Dunker, 1862)	Vc
Fusitriton magellanicus laudandus Finlay, 1926	VR
Cabestana spengleri (Perry, 1811)	R

Muricidae

Paratrophon patens (Hombron & Jacquinot, 1854)	R
Xymene ambiguus (Philippi, 1844)	R
Haustrum haustorium (Gmelin, 1791)	UC
Lepsiella scobina (Quoy & Gaimard, 1833)	UC
Lepsithais lacunosus (Bruguière, 1789) [*squamatus* form]	UC
Dicathais orbita (Gmelin, 1791)	UC

Buccinidae

Austrofusus chathamensis Finlay, 1928	R
Austrofusus glans (Röding, 1798)	UC
Buccinulum linea linea (Martyn, 1784)	UC
Buccinulum vittatum littorinoides (Reeve, 1846)	UC
Cominella adspersa (Bruguière, 1789)	UC
Cominella maculosa (Martyn, 1784)	UC
Penion ormesi (Powell, 1927)	VR
Penion sulcatus (Lamarck, 1816)	Vc

Volutidae

Alcithoe arabica (Gmelin, 1791)	UC

Alcithoe larochei Marwick, 1926	VR
Olividae	
Amalda (*Baryspira*) *australis* (Sowerby, 1830)	UC
Conidae	
Phenatoma rosea (Quoy & Gaimard, 1833)	R
Siphonariidae	
Benhamina obliquata (Sowerby, 1825)	C
Siphonaria australis Quoy & Gaimard, 1833	UC
BIVALVIA	
Arcidae	
Barbatia novaezealandiae (E.A. Smith, 1915)	UC
Glycymeridae	
Tucetona laticostata (Quoy & Gaimard, 1835)	C
Mytilidae	
Aulacomya atra maoriana (Iredale, 1915)	C
Mytilus edulis galloprovincialis Lamarck, 1819	UC
Perna canaliculatus (Gmelin, 1791)	Vc
Trichomusculus barbatus (Reeve, 1858)	R
Modiolus areolatus Gould, 1850	UC
Pinnidae	
Atrina pectinata zelandica (Gray, 1835)	UC
Ostreidae	
Crassostrea gigas (Thunberg, 1793)	???
Tiostrea chilensis lutaria (Hutton, 1873)	Vc
Pectinidae	
Chlamys zelandiae (Gray, 1843)	C

Carditidae	
Venericardia purpurata (Deshayes, 1854)	UC
Mactridae	
Mactra discors Gray, 1837	Vc
Mactra murchisoni Deshayes, 1854	UC
Oxyperas elongata (Quoy & Gaimard, 1835)	R
Spisula aequilatera (Deshayes, 1854)	C
Mesodesmatidae	
Paphies donacina (Spengler, 1793)	C
Tellinidae	
Peronaea gaimardi (Iredale, 1915)	R
Pseudoarcopagia disculus (Deshayes, 1855)	UC
Psammobiidae	
Gari (*Gobraeus*) *stangeri* Gray, 1843	R
Veneridae	
Dosina zelandica Gray, 1835	C
Austrovenus stutchburyi (Gray, 1828)	UC
Protothaca crassicosta (Deshayes, 1835)	Vc
Tawera spissa (Deshayes, 1835)	C
Dosinia (*Phacosoma*) *subrosea* (Gray, 1835)	R
Irus (*Notirus*) *reflexus* (Gray, 1843)	Vc
Irus (*Notopaphia*) *elegans* (Deshayes, 1854)	R
Ruditapes largillierti (Philippi, 1849)	Vc
Hiatellidae	
Hiatella arctica (Linnaeus, 1767)	Vc
Panopea smithae Powell, 1950	R
Panopea zelandica (Quoy & Gaimard, 1835)	R
Pholadidae	
Barnea (*Anchomasa*) *similis* (Gray, 1835)	Vc
Pholadidea suteri Lamy, 1926	R

LANDSNAILS

Charopidae

Therasia thaisa Hutton, 1883 C

Zonitidae

Oxychilus draparnaudi (Beck, 1837) UC

Helicidae

Helix aspera Müller, 1774 UC

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Editorial note: Since this article was written the following appeared in *The Dominion* newspaper of Saturday 18 November 2000 at p. 14 – "**Mussel farm given green light.** A huge mussel farm on the east of the South Island has been approved by the Marlborough District Council. The council has made an interim decision in favour of a 460-hectare mussel farm at Clifford Bay, but chopped its size from the 1300 hectares originally applied for. The original application was opposed by Tranz Rail earlier this year because of concern that the farm could be a navigational hazard for a port that may be built at Clifford Bay ..."

-oOo-

AN UNUSUAL SHELL IDENTIFICATION TASK

By Jenny Raven

Wellington Shell Club members were given the interesting task of identifying shells collected from the remains of the boat *Inconstant* that was discovered during renovations in 1977 beneath the old BNZ building on the corner of Lambton Quay and Willis Street. This boat was also known as "Plimmers Ark" because of its association with John Plimmer one of Wellington's founding citizens. The *Inconstant* had been wrecked off Pencarrow Head in 1849 and was purchased by Plimmer who arranged for it to be towed to the Lambton Quay foreshore where he converted the space above the hull to offices and a warehouse. It continued in use till the 1880s when buildings, including the main Wellington BNZ building, were built over it. Having been rediscovered almost a century and a half later it has been carefully dismantled by professionals and parts are currently being reassembled for public display.

Diver Rex Johnson gave a talk to the club during 2000. Rex has a strong interest in marine archaeology and is assisting with the *Inconstant* restoration task. He brought the shells along to the meeting and asked if members would like to identify them. This was done when we were again back at the Natural History Unit. The shells were divided up amongst members and provided an interesting exercise in identification and finding ones way round the Museum collection when comparisons were needed.

The predominant shell present by far was *Maoricolpus roseus,* some whole and still brown in colour. Bivalves predominated - most were bleached, singles valves, with many in pieces although a number were found with both valves intact. This would indicate (assuming they had not come from the surrounding soil) that they had at one time lived on the hull and raised for me the question as to when they had lived there. Were they attached prior to the grounding or did they live on the hull where it sat on the Lambton foreshore even later when deep beneath the BNZ building? Both the shells and the records of the *Inconstant* proved useful here.

All of the shells identified can still be found in Wellington harbour today although some would normally live below the low tide level rather than on the shoreline. *Maoricolpus roseus* usually lives below low water. *Ruditapes largillierti* and *Gari stangeri* are particularly common today on each side of the harbor entrance at Eastbourne and Seatoun with *Pseudarcopagia disculus* more common in the Lyall bay area. *Panopea zelandica* is a deep burower in mud and is only occasionally found washed up around the harbour. *Austrovenus stutchburyi* on the other hand very commonly lives in shallow water in sheltered areas. Curiously *Mytilus,* the common blue mussel which is prolific today around Wellington's wharf piles, was not present in any great quantity in the shells identified. Another item of interest was that the "Catseye" *(Lunella smaragdus)* specimens and the bivalve *Pseudarcopagia* were all quite small in comparison with their usual size in the harbour today.

I discovered from the records* that the shells were unlikely to have been attached before the grounding because the *Inconstant* had a very short life at sea. It had been built overseas in

1848 and was on its first voyage to Wellington when wrecked in 1849. It sat for a short while at Te Aro before being sold to Plimmer and towed across to the Lambton foreshore in 1850 where the water around it was deep enough for boats to moor alongside. This remained the case until the 1855 Wellington earthquake, magnitude 8.2, raised the shoreline around the *Inconstant* causing it to tip on its side. The water around it thereafter was too shallow for boats to come alongside. However some water remained. In the 1880s there were complaints from the offices above of stagnant water below. Today the *Inconstant* site is one block and two busy streets back from the wharves but I believe the high tide still reaches in beneath many of Wellington's streets today. I recall hearing the sound of a distant bell ringing each day beneath a jewellers shop I worked in, in Manners Street in the late 1960s and was told this was a bell that rang when reached by the high tide deep down below.

It would therefore seem that the period 1850 to 1855 when the water was deeper around the *Inconstant* that most of the shells we identified would have lived on the hull. The earthquake may well have brought a sudden end to the existence of many of them and this might account for the smaller size than usual of some of the shells present.

The shells came in two containers with "bow section" on one and "keel section" on the other and we therefore kept each separate for identification purposes. However I did note that one piece of a *Macomona liliana* was found in one container and a matching piece in the other.

The following is a list of what was present: -

Bow section

BIVALVIA

Ruditapes largillierti x 6 halves and 2 doubles
Pseudarcopagia disculus x 6 doubles and 5 halves (small)
Austrovenus stutchburyi x 1 double and 15 halves
Tiostrea chilensis lutaria x 2 doubles
Gari stangeri x 5 halves
Dosinia maoriana x 1 half
Mytilus edulis galloprovincialis x 1 piece
Divaricella huttoniana x 1 half

GASTROPODA

Maoricolpus roseus x 95 whole and pieces
Turbo smaragdus x 4 (small)
Cominella sp. x 1

Keel Section

BIVALVIA

Panopea zelandica x 1 half
Macomona liliana x 1 half
Ruditapes largillierti x 1 double and 8 halves
Pseudarcopagia disculus x 1 half
Austrovenus stutchburyi x 4 halves
Tiostrea chilensis lutaria x 5 halves
Gari stangeri x 1 half

GASTROPODA

Maoriculpus roseus x 15 whole and pieces
Turbo smaragdus x 5 (small)

* Records from the *Inconstant* Gallery old BNZ Building, Wellington.

-oOo-

"The Scientific Role of the Amateur Malacologist"

By Jenny Raven

A numbers of old malacological reprints and publications came the Club's way during the year. Most were on incredibly obscure topics on overseas species and of little interest. One however caught my attention. It was exactly the opposite. It was a three-page reprint from *The Nautilus* in October 1953 by David Nichol entitled "The Scientific role of the Amateur Malacologist."

It had a simple message. The paper proposed that rather than getting involved in the complexities of taxonomy (other than to be able to correctly identify species) the amateur could make a valuable contribution to the study of malacology by publishing their observations of the living animals. It commented how little is published on the simplest ecological facts on even the most common or commercially important species. These observations, if published, could considerably aid the professional in their task, solve problems and save valuable research funds and effort. Minimum equipment is needed and the amateur is the one who is best placed in the field with the opportunity to do this. Observations, such as - where the animal was found, depth, type of bottom, what it was feeding on and the time and conditions of spawning all are valuable.

A simple message that still holds true today!

-oOo-

Observations on Live *Hydatina*

By Jenny Raven

Hydatina is a common subtropical shell but in New Zealand's cooler waters has generally been regarded a something of a rarity. In August this year I had the privilege of finding live *Hydatina*. This was a first for me and quite a thrill. I had often been to Parengarenga harbour and never seen any. It was the one shell Peter Jamieson had wanted to find when he first introduced me to the harbour in the early 1980s. The books say they live in colonies but most people I knew had only found the odd one or two *Hydatina physis* at any one time in Parengarenga. When I was there with Pat Lakeman some years ago we spent most of the low tide fruitlessly walking up and down out on the sand flats where we had been told to look in a spot where three trees lined up on the opposite bank only to return to the wharf to find the men we had left behind fishing holding one *Hydatina physis* each. Of course there were no more.

This August, Far North resident and shell club member Bob Grange accompanied me. Bob said he had once come across a colony of about 13 *Hydatina physis* on the sand flats out towards Dog Island. This time we walked out as usual out across the mud to Dog Island, - nothing unusual here a couple of nice crab inhabited *Natica migratoria*, one nice *Cymatium parthenopeum* found by Bob on the Island rocks and some nice yellow *Cominella adspersa* on the way back but certainly no *Hydatina* opposite the three trees. In summary a pleasant day - the sun was out and that was OK. Back near the wharf I said to Bob that as the tide was still low I would climb down where our fishermen friends had previously found the *Hydatina physis*. Bob said he would head to mud flats south of the wharf. He had scarcely disappeared from sight when I saw the first *Hydatina physis* and then another and another – six in all. They were quite a way out of the water either crawling over the sand or partly buried amongst the rocks.

Because this was a first for me I took some time photographing the animals and examining the shells. I then thought I had better find Bob. The tide was low enough that I decided to venture on around the rocks and under the wharf toward the mud flats at the south end. On route I found another two *physis*. Under the wharf the tide was still low but nothing of note there - a little further I saw Bob making his way to the beginning of the sand and rocks leading to me. Just past the wharf I saw another couple of *physis* and decided I had better alert Bob to their presence. At the same instance I noticed he was waving out to me - he had just found his first one or two at that end. For the next twenty minutes until we met up we kept finding live *Hydatina physis* everywhere. - large, small, many well out of the water, amongst, or even on the rocks and some in the water along the channel edge. All appeared healthy, either crawling along with their colourful mantle extended or partly buried in the sand. We must have seen about 30 each. If this wasn't enough we had just met up when I noted what looked like a mauve jelly fish floating by along the edge of the channel. I tentatively reached out to touch it and realised it was a *Hydatina*, only the shell wasn't *physis* it was a *Hydatina albocincta*! Exclamations over, more photographs had to be taken. I was not sure if *albocincta* had been found in Parengarenga before. I knew the odd shell had been found amongst *physis* in Rangaunu harbour further south. No more *albocincta* was seen and we returned home. When Betty Grange learnt of our finds we just had to go back the next day so she could also witness this unique occurrence.

This time we were there before the low tide and went straight to the wharf area. I had previously thought *Hydatina* were buried at the low tide and rose to the surface once the tide turned, but no, they were all there happily crawling over the surface with the tide still going out. There seemed to be more than before. I would think we saw about 80. I was looking for more *albocincta* but none were found. Curiously although I covered the same ground around the wharf as before this time I found a beautiful live *Charonia lampas, Ranella australasia* and some *Cabestana spengleri* and Bob found a very nice live *Calliostoma tigris* on the base of a rock so obviously these animals are very mobile.

This time I did find one freshly dead *physis*. It was partly buried well out of the water amongst the rocks. I then wondered whether they had come here to spawn or whether they had been washed here by the current and would therefore survive. A local resident who has sent me some *Hydatina* shells from Rangaunu harbour believes they are carried into the particular spot she finds them by the current only after strong winds and seas wash over the bar near the entrance. I wondered if this was the case with these shells as all sizes were present and many were well out of the water. On the other hand I recalled a note in an old *Poirieria* (Vol.3, no1) which referred to the presence of live *Bulla quoyi* in harbours – how they appeared in shallow water in great numbers to spawn and within three to four days had gone again. I contacted Bob Grange about a month later. He had just been back to Parengarenga and the colony was still there!

The live floating *albocincta* was also curious – where were its mates ? - had it been a loner living with the *physis?* All the *physis* had light lemon coloured bodies; the *albocincta* had a mauve/pink body with a white line around the edge of the mantle. I noted that one of the *physis* had very dark lines on the shell giving it a dark appearance and curiously its animal was the same mauve colour as the *albocinta* but without the white line. Finding the live *albocincta* had been my greatest thrill. It would be nice to think that a larger colony of them is still living, reclining on a sandbank somewhere in Parengarenga and some will one day return to show themselves again.

SOME RECENT PUBLICATIONS YOU SHOULD KNOW ABOUT ...

The following items appeared from Bruce Marshall's hand during 1999. You will have to annotate you copy of "Spencer & Willan" accordingly – and forget about trying to keep your "Powell" up to date – the world is achanging too rapidly.

Pulvinites exampla (Hedley, 1914) from the New Zealand region (Mollusca: Bivalvia: Pulvinitidae). *The Nautilus* 112: 99-102.

A revision of the Recent Solariellinae (Mollusca: Gastropoda: Trochoidea) of the New Zealand region. *The Nautilus* 113: 4-42.

The New Zealand Recent species of *Muricopsis* Bucquoy, Dautzenberg & Dollfus, 1882 (Gastropoda: Muricidae). *The Nautilus* 114: 18-29 (with K.W. Burch).

And don't overlook adding in the names from two earlier papers (both published in 1988) which you might have missed:

A review of the Recent Trochini of New Zealand (Mollusca: Gastropoda: Trochidae). *Molluscan Research* 19: 73-106.

The New Zealand Recent species of *Cantharidus* Monfort, 1810 and *Micrelenchus* Finlay, 1926 (Mollusca: Gastropoda: Trochidae). *Molluscan Research* 19: 107-156.

UNDER THE U-NEVER SEA

By Elliot Dawson

During our days (and nights!) trawling and dredging the deep seas around New Zealand we often found how, on some occasions, a trawl would come up loaded with "goodies" of all sorts, another time the net would be torn, leaving us to wonder what had got away and what evil thing had ruined our hours of work, and yet other times when the whole dredge would surface full of enormous rocks or gooey mud. How did it get there? Did we have friends or foes down below? Had we offended the gods of the deepsea by poking about in their realm? Or were we rewarded by choice items from time to time? All has now been revealed ...

I came across this engraving of what does go on at the bottom of the U-never Sea. It's worth sharing with you. It comes from the account of the famous German Deep Sea Expedition in the vessel '*Valdivia*' from 1899 to 1900.

From: CHUN, C. 1900: *Aus den Tiefen Weltmeeres. Schilderungen von der deutschen Tiefsee-Expedition*. 2nd edition. Gustav Fischer, Jena. Pp viii + 1-549, 46 pls, 2 maps.

THERE'S MORE TO MOLLUSCS THAN JUST COLLECTING THEM !

- SOME GASTRONOMIC IDEAS FOR THE CONCHOLOGIST WHO WONDERS WHAT TO DO WITH WHAT'S INSIDE THAT SHELL

How about starting with a mussel or two ?

Stir-fry mussels and rice (or noodles) – serves 4:
Take 12 or so mussels, 1 chopped-up onion, 1 minced-up garlic clove, 1 chopped-up green (or red) pepper, about 225 g [i.e. ½ lb] of sliced fresh mushrooms, 2 medium-sized tomatoes cut into quarters, ½ cup of breadcrumbs, 3 tablespoons of olive oil, salt & pepper. Sauté the onions, garlic, and peppers until they're soft. Add the rest of the ingredients and stir vigorously until the mussels are thoroughly heated through – takes about ¼ of an hour. Serve on white or wild rice (or whatever kind you prefer) – or on noodles for a change.

Now, may be mussel sauce for pasta ? This one serves 4 people for an entreé or 2 if you're really hungry ...
Take 12 mussels (or 250g [about ½ lb] of chopped up mussels). 50g of butter) [margarine will have to do if you're cholesterol-conscious], 1 finely-chopped onion, 1 chopped (and peeled) garlic clove, ½ teaspoonful of paprika, ½ teaspoonful of dried sweet basil, ¼ of a teaspoonful of black pepper, 2 tablespoons of cream [too bad about that cholesterol!], 1 tablespoonful of grated parmesan cheese, 200 g of cooked spaghetti, fettucine, or whatever pasta like. Chop up the mussels pretty small – or mince them. Sauté the onion and garlic in the butter for about 5 minutes. Now add the basil, paprika, and the black pepper – with a touch of salt. Sauté the whole lot for another 5 minutes. Add all the mussels to this, with the cream. Now heat it up, without boiling Serve over your hot pasta, and give it a good sprinkling of the parmesan to your taste. Enjoy !

Something lighter ? Try a crunchy mussel salad. This ought to serve 6 people as an entreé – or 3 hungry ones as a main ...
Get 18 marinated or smoked mussels (yummy!), 4 sticks of celery (finely chopped-up), 2 spring onions (also finely chopped up). A nice red apple which you must core and dice, add 2 or 3 tablespoonfuls of mayonnaise or salad dressing (remember that cholesterol – buy the low/non-fat ones). Mix all these ingredients together – and chill before serving.

Had enough yet ? Try something with frozen mussels for a change ? How about mussels with sour cream and thyme ? This'll serve 4 folks. Get a pack of frozen mussels (in the shell if you can), take ½ pint (say 300 cc [or ml]) of sour cream), 2 or 3 teaspoonfuls of French Mustard, 1 teaspoonful of dried thyme, ½ teaspoonful of ground fennel or aniseed, and some salt & pepper. Mix the sour cream, mustard, thyme, and the fennel together. Thaw out the mussels, ¼ to ½ an hour (or heat them up quickly). Remove one the shells from each mussel, put in a dish in the oven with the creamy stuff poured over everything and bake at 250°C for 10 minutes or so. And serve it with some nice French or other fancy bread.

On the other hand, you might like to try a nice *Mytilus* (or *Perna* ?] soup with curry for your 3 guests ...
Get a pack of frozen (or other) mussels. Take 2 tablespoons of olive oil (very good for you all), ½ a finely-chopped onion, and 2 cloves of finely-chopped garlic, then 1 or 2 teaspoons of curry powder (depending on your whim), a bit of fish stock if you like, 1 to 1½ pints (600 to 900 cc [or ml]) of water, 6 to 8 tablespoons of whipped cream[ouch, that cholesterol again?], egg yolk and some finely-chopped chives. Now fry the onion, garlic, and the curry powder in oil. Add the bit of fish and the water, then the mussels and simmer it all for 3 or 4 minutes. Then get your slotted spoon (not your fingers)n and lift out the mussels. Now blend in the egg yolk and cream, and rapidly whisk them into the soup. Season it with pepper and salt. Now add the mussels and sprinkle the chives on top. Serve with your fancy bead. OK?

Maybe you like the sound of mussel chowder – a change from the old "clam chowder" one always hears about ...
Take your 12 mussels, good for about 6 folks, and 500g (that's about an old pound?) of potatoes, peeled or scrubbed, and chopped up mighty small, 3 cups of boiling water, salt and ground pepper (hope you've got a nice grinder), and about a teaspoonful of grated lemon rind, and 4 tablespoons of cream. Chop up the mussels pretty well – or mince them. Cook the spuds in the boiling (and salted) water; now add the mussels, the black pepper, the lemon rind and that lovely cream. Simmer all this mixture for about 5 minutes, but don't let it boil. How about that ?

Or, if you're up to it, how about "Mytilidae au Gratin" ? Astonish your guests with your grasp of Esperanto ...
Get hold of 12 mussels again – this is becoming a habit – tale 1 egg white, 1 teaspoonful of water, ½ cup of white breadcrumbs (wholemeal's much better for you!), 1 teaspoonful of chopped parsley, out of your own vegie patch, 1½ tablespoons of butter (margarine ? Ugh!), a thin slice of bacon, and the usual salt & pepper. Beat up the egg white with water. Mix the breadcrumbs with the parsley separately. Steam the mussels, if need be, to open them a bit, take the m out of the shell and dip into the egg, then into the breadcrumbs + parsley mix. Return the mussels to their ½ shells and slosh a bit of that luscious melted butter over them, and top with a little bit of bacon. Put them on a greased dish under the grill, fairly moderate, for 6 or 8 minutes. Should be great - but ask your guests if they want seconds. There were only 12 mussels to begin with ...

If you've enjoyed this lot, you'll end up being a malacologist rather than a conchologist – in other words, you'll be more interested in the soft parts rather than the hard parts ...

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ON OUR GIANT BIVALVE *ACESTA*, CORAL REEFS, AND SOME DEEPWATER THOUGHTS FOR THE FUTURE

By Elliot Dawson

A notice recently received from the publishers of the famous natural history museum in Paris, the Muséum National d'Histoire Naturelle, introduces their new series "Tropical Deep-Sea Benthos" in continuation of the beautifully-illustrated and scholarly "Résulats des Campagnes MUSORSTOM" which has documented the results of French deepsea explorations in the Indo-Pacific Region, notably off the Philippines and New Caledonia, a series to which many distinguished scientists have contributed reports.

The publishers state: "The deep benthos of the tropical seas represents one of the last frontiers of marine diversity, and recent deep-sea exploration confirms the Indo-Pacific as a major reservoir of unknown forms of life in all taxonomic groups. However, unlike most other tropical biological communities, the deep-sea benthos has suffered from a lack of focussed attention from zoologists and oceanographers [that's mainly because it's a terribly expensive business running a deep-sea research vessel – as well as the decline in training taxonomists in the universities]. *Tropical Deep-Sea Benthos*, a continuation of *Résultats des Campagnes MUSORSTOM*, is a series dedicated to inventorying [horrible word!] and describing the deep-sea faunas of the world, with special emphasis on the most extensive of its biogeographical regions: the Indo-Pacific."

Volume 22, now titled "*Tropical Deep-Sea Benthos*" is edited by our own Bruce Marshall (with Philippe Bouchet of the Paris museum) is of particular interest to all those fascinated by molluscs found in the deep seas of the world because all 12 of its articles are most intriguing, featuring species which we may never be privileged to see in the flesh (or, in the "shell", I suppose) but are none these less exciting for all that.

Of particular to us, on the New Zealand scene, is Bruce Marshall's paper on the bivalve genus *Acesta* in the South-west Pacific in which he describes and illustrates the two new species now commonly being found in deep waters around New Zealand and further afield, a distribution pattern which appears related to the disposition of our tectonic plates. I am glad, especially, that after 36 years of knowing of the existence of these species, someone has at last given them names, for it was in 1964 that I first recognised the occurrence in New Zealand of this genus as a living form when I identified a specimen live-collected by my late colleague Dr Ivan Estcourt[12] on an Oceanographic Institute cruise in HMNZS '*Endeavour*' at NZOI station F146, lat. 53° 00'S, long. 172° 45'E, depth 435 metres, globigerina ooze bottom, east of Campbell Island on 1 February 1964. As I related in my article in *Cookia*, May 1995[13], I showed this specimen to Dr Marwick of the then New Zealand Geological Survey, who was greatly excited to see a form he knew well as a fossil represented in the New Zealand Tertiary beds. This living New Zealand species (or, strictly, the closer inshore species of the two which Bruce has described) was first illustrated in a rather obscure Japanese report[27] of the results of the explorations of the fishery research ship '*Kaiyo Maru*', on which I was privileged to be

and where I collected *Acesta* myself. Dick Dell illustrated it again in one of his papers in 1978.[14]

Acesta, in the shape of one or other of Bruce's new species, has turned up commonly in deep water around New Zealand and further afield, to the extremes of the New Zealand EEZ, apart from the other 20 or so species occurring in other oceans. Hooking it up on groper long lines off Kaikoura has been one of more unusual ways of collecting it! We once managed to keep some alive in a tank taken this way. I collected many shells, in various states of preservation, during the phosphorite explorations of the German vessel '*Sonne*' on the Chatham Rise[11] where it was associated with low patch development of the coldwater bank-coppice-building corals of the genera *Goniocorella* and *Desmophyllum* – the ecological equivalents of the *Lophelia* coral banks of the Northern Hemisphere, which characteristically contain the giant *Acesta excavata*. There is a tremendous amount of exploration and research being done on *Lophelia* and the biology of these northern reefs as threatened habitats.[15-20, 28-29, 41, 48] I wish I could find out what became of some fine specimens which a Norwegian colleague once sent me have got to, but the local species are just as big and, maybe, will provide material for live studies as have been done on *A. excavata*. The Norwegian habitat has just recently been described in graphic detail in a new book[23] which also covers deep coldwater coral structures all over the world (including New Zealand). Unfortunately it's in Norwegian – but it does have an English summary, and the copious illustrations tell a lot. Some 700 species are listed as living on these structures. The authors say –

"In this book we not only take you on a guided tour of some of Norway's fascinating coral reefs, from north of Tromsø, to the continental shelf off Mid-Norway, inside the complex fjord systems of the Trondheimsfjord, and the archipelago off Bergen, but also to occurrences off New Zealand, the Gulf of Mexico, off Brazil, and the Mid Atlantic Ridge, at 2,000 metres water depth. Even though the corals and cold-water reefs have been known to science for more than 200 years, it is first now, with the aid of modern underwater survey equipment that it has been possible to patch together a comprehensive account of what we really know about these mysterious communities which seem to defy all rationale for their existence ... we discuss several theories on why the corals settle and thrive where they do, including theories focusing on hydrodynamic turbulence and seafloor topography. Our analysis, reasoning, and some of the facts lead us to present a new and controversial theory which we call the hydraulic theory. It takes into account a suspected contribution of chemical and organic fluids from the sub-seafloor environment. This sub-surface nourishing contribution, we suggest, either supports a local stock of micro-organisms and prey, or supports the coral skeleton formation through chemical modifications of the local environment."

What an exciting challenge to try to apply this to the New Zealand scene! I have often wondered how the little colonies on the Chatham Rise and elsewhere got started. Certainly the overseas findings on *Lophelia* will be interesting to apply to our local scene. Coral patches[48] and coppices[38, 43] as known in New Zealand waters[11, 44] are not generally developed to the size of the *Lophelia* structures in the northern seas, but like the seamounts, currently in the news as threatened habitats[25,26,29, 38] (which can be thought of as geological structures rising within a hundred metres or so of the sea surface), are very important as shelter, not only for an abundance of other marine vertebrates (some of the coral structures contain over 700 species)[28, 34, 37] but as areas for young of commercially-important fish to develop and feed. In 1984 I wrote an account of the coral structures on the Chatham Rise (which, because it was published in a geological journal, is not widely known to other marine biologists).[11] There I pointed out the importance of these relatively

small, though widely scattered, coral patches which occur as isolated hard structures on an otherwise uniform soft sediment bottom, like oases in a desert, forming centres of shelter and nutrition, especially for young fish and crustaceans. There is still much to be done in mapping the distribution of these organic structures and learning about the interrelations and interdependence of their associated fauna, of which our *Acesta* species are characteristic.

Coral structures, ranging in size from little patches to quite substantial reefs have bee n known in the Northern Hemisphere for a good many years, and much research has been done on them, especially in Norway, off the Western Approaches to the European seas, and in the Mediterranean.[9] Similar structures, with the coral *Oculina*, and carbonate mud banks are found off the east coast of North America.[34-36]

Lately, there has been quite a surge of interest in the eastern North Atlantic reefs, especially off Ireland,[25, 26, 29] as their presence may be related to the seepage of methane and other gases from undersea hydrocarbon reservoirs.[16, 21, 22, 25]

"We've known about them for over a century. Last year their full extent was recorded in the international journal Nature, and by this newspaper. Yet most of us still associate coral reefs with exotic, warm tropical locations. Not so. Our western waters are replete with them, and they are as close as 100 kilometres to the coast. Why aren't we hearing more about it? Perhaps it is because of their link with oil and gas exploration. As Dr Mark Costello, an ecological consultant, outlines in the current issue of Technology Ireland, the occurrence of deepwater coral and seepage of methane and other gases from hydrocarbon reservoirs beneath the seabed may be more than a coincidence. The coral may, therefore, indicate the presence of these mineral reserves. Greenpeace sought unsuccessfully to prevent oil and gas exploration near coral reefs in British waters, arguing that it would breach the EU Habitats Directive. The relationship between the coral and the methane seeps is still the subject of debate, he says, but exploration work by the oil and gas industry is stimulating interest in scientific rese arch. These *Lophelia* reefa contain a biodiversity that is as rich as those in the tropics. Over 860 species of animals have been recorded on *Lophelia* in the north-east Atlantic, and about 300 on single reefs off Norway, Shetland and the Bay of Biscay. Redfish, saithe, cod, ling, tusk, squat lobsters and other shellfish weave among the coral's branches, and a wide variety of animals, including sponges, depend on it for life. The reefs are formed by two coral species which interconnect with tubes of a worm called *Eunice norvegicus* but their existence in these waters is not widely recognised, he says, because of lack of offshore ecological research. In spite of the deepwater location, the coral can grow at rates similar to those in the tropics, he says. Norwegian studies indicate a growth rate of six millimetres annually, which means reefs of one or two metres can be several hundred years old. Unfortunately, bottom-trawling has rendered rubble of some reefs off Norway and Scotland, and the unique habitat will takes centuries to recover."

The Irish Times 9 November 1998.

Thanks to some interesting (and quite exciting) work by Keith Lewis of NIWA,[31, 32] we do know something of the quite widespread occurrence of such seeps on the New Zealand seafloor (and Bruce Marshall[32] has detailed what has been found so far of the associated molluscan fauna). At least one species of *Acesta* has been found (in the Gulf of Mexico) in a somewhat similar association.[30]

Such has been the new interest in deepwater coral structures that a First International Conference on Deepwater Corals was held earlier this year in Halifax, Nova Scotia, July/August 2000. A preliminary report from it, in the *New York Times*,[38] stated that it was resolved that: "It is essential that existing national laws and international conventions

for the protection of biodiversity and the regulation of fisheries be extended to cover these unique and vulnerable deep-water habitats." As as an example of the richness of such coral structures, this newspaper correspondent said this (amongst a lot of other equally interesting things) –

"The diversity of life in the interstices of the coral mounds is dizzying, and just beginning to be appreciated. Several years ago, Andreas Jensen and Rune Frederiksen [[28]] ... dissected 40 pounds of coral hunks retrieved from a reef near the Faroe Islands, east of Iceland. They counted 4, 626 organisms belonging to 256 species, with 42 other species in loose coral rubble that came up with the pieces. Nearly 100 species have never been recorded from that region before. And when scientists compared the creatures with those from coral samples taken from reefs in Norway and the Bay of Biscay, there were only a few overlaps, indicating how variegated this deep-sea quilt is."

An enormous joint project, involving at least 20 European marine research institutes, called ACES (the Atlantic Coral Ecosystem Study) is underway now[19], and substantial funding has been put into ensuring that results will be got for the benefit of biologists, geologists, and those in the fisheries and petroleum industries. Some £13 million has already been allocated, of which Irish researchers have been awarded £1.3 million.[29]

Acesta may turn out to be an important and useful biological 'indicator' – because of its apparent general association with coral structures such as the 'patches' of the Chatham Rise and the 'coppices' in other places in New Zealand seas. The collection of odd valves, let alone live specimens, may indicate the presence of such structures otherwise undiscovered or unmapped as such. There is little information yet available on the extent of coldwater coral structures in the Southern Hemisphere. The first such structure was that reported by Squires in 1965[44] as found on an oceanographic cruise (of which I happened to be the leader with Dr Squires coming along as a guest investigator from the United States National Museum). This structure was surveyed by me on a subsequent cruise and was found not to be a coral 'bank' in the classic sense (as described in Squires' sequences of development[35, 43]) but rather a series of low 'patches' developed on the edge of a small seamount. Nevertheless, this was indeed the first reported coldwater coral structure of the Southern Hemisphere (although some of early 19th century scientific voyages may, in retrospect, have dredged on such bottoms). The distributions of the two coral species which form seafloor structures in the New Zealand region, *Goniocorella dumosa* and *Desmophyllum dianthus* [formerly known here as *cristagalli*], are shown on the maps in the recent monograph on the New Zealand coral fauna by Cairns,[8] and indicate where one might look in more detail for coral structures and their contained fauna.

Another species of mollusc may also be indicative of coral structures in New Zealand waters. *Iphitus neozelanica* (Dell, 1956), a member of a genus previously known only from the eastern North Atlantic (as *I. tuberatus* Jeffreys, 1883) and *I. cancellatus* Dautzenberg & Fisher, 1896; see also Bouchet & Warén 1985[5]) was reported by Beu & Climo in 1974[3] associated with coral in the depths of Palliser Bay, Cook Strait, and later discussed in more detail by Beu 1978.[2] Subsequently, *Iphitus* was collected in the Mediterranean, southwest of Sicily, on a soft bottom rich in coral debris, as reported by Taviani & Sabelli 1982.[45] These authors said of this occurrence: "The presence of such

large Scleractinians [stony corals] infers for the Mediterranean *Iphitus* the same habitat of *I. neozealanica*."

Coral banks are also found as fossil occurrences in New Zealand (and overseas).[35, 43, 46, 47] And, similarly, *Acesta* is quite well-known (and spectacular) as a Tertiary fossil here.[4] Studies on the distributional ecology of living *Acesta*, and of the coral species with which it is frequently associated, could be most helpful towards the task of trying to interpret the conditions in which these coral structures have developed and thrived. The fossil *Acesta* specimens already in various collections may serve as indicators of such sites, and, perhaps, of associations which hydrocarbon seeps and possibly tectonic and sedimentary regimes of long ago Also some recent work by Friedwald's group at Tübingen University[18] on the grounding effects of Pleistocebne icebergs on shaping deepwater coral reefs may be of future significance related to our Chatham Rise where within (almost) living memory icebergs came[6] (and certainly in earlier times too when they dropped their bed load of rocks on the seafloor). There are lots of exciting things to think about!

Acesta may not always be associated with coral, however, and there may not be an obvious correlation in the New Zealand region between hydrocarbon seeps and coral development as in the Northern Hemisphere[21, 22] but it worth looking any such here or at least checking on any suspected associations.

Such can be demonstrated now. One of the *Acesta* samples examined by Bruce Marshall comes from listed by a location at or near a dredging station done from the U.S. research vessel '*Eltanin*' in the Southeast Pacific on 17 November 1964 in 549-915 metres which was reported for the first time by Cairns & Stanley (1982: 613, table 1)[9] as a likely coral structure (in which 32 groups of animals representing 13 phyla were found, the dominant coral being *Solenosmilia variabilis*). Similarly, records of *Acesta* near submarine canyons off the New Zealand coast may indicate the presence of coral growths on the canyon edges (although *Acesta* may have some swimming ability at some stage of its life, as indicated by collections made from fishing lines here and in the Philippines). An isolated *Acesta* which I collected (without knowing it at the time!) from a dredge haul in Dusky Sound in 1961 may, also, be related to the occurrence of coral, although the associated species here was *Madrepora oculata*).

Until now, so far as I am aware, Norway is the only country that protects deep sea corals by legislation. In June 1999, after the Institute of Marine Research in Bergen[24]warned the Directorate for Nature Management of damage being done to the Tautraygg Reef in the Trondheim fiord, restrictions on fishing and other operations were introduced, (with the full cooperation of the commercial fishing industry).

Fishing activities in New Zealand waters, especially with the Orange Roughy,[10] appear to be having effects on the seamount faunas (although corals are not appreciated as trawling grounds), and there is considerable concern now in New Zealand for protective measures.[33] Similarly, a recent report of the high benthic diversity and endemism on seamounts in the southeastern Coral Sea and Tasman Sea indicates a need for protection. As well as protection of seamounts as such, the importance of coldwater coral structures

(with their associated fauna) in New Zealand waters needs to be highlighted. Legislation is now in place for protecting the numerous seamounts which have been found in New Zealand waters,[42] but we might learn of the consequences of neglect from a recent article in *The Irish Times*:[26] ...

"Irish deep-sea "treasure" could be in danger, according to a Galway scientist who has called for a management strategy to protect it. Dr Anthony Grehan, of NUI Galway's Martin Ryan Marine Science Institute, says the "treasure", recently-discovered coral reefs, could be quickly destroyed if adequate protection measures are not arranged. He identifies the main threat as commercial fishing, principally by foreign vessels in Irish waters. However, he also says exploitation of mineral reserves could also cause damage. It is a problem which has arisen elsewhere. Several mining codes are being developed under the UN Law of the Sea Convention ... Fishing methods, mainly trawling, are also being curtailed to protect coral off Norway. The coral reefs identified in the Porcupine Seabight and Rockall Trough are spectacular, according to Dr Grehan, and rival their tropical cousins in terms of biodiversity. He says they also appear to support a rich fish life. Whereas tropical coral, such as that found in the Pacific and Caribbean, requires light, the Atlantic coral grows in dark and cold depths. Scientists are keen to know more about their origin and their association with much deeper deposits of hydrocarbon. Deep-sea fishermen are well aware of their presence and have often lost gear on the large carbonate mounds or underwater hills some 300 metres high on which the coral thrives. More than half of the world's deep-sea coral reefs have been destroyed already, with a detrimental effect on fish ... Dr Grehan intends to produce an atlas of Irish coral and hopes to draw heavily on the experience of fishermen ... "

The Irish Times 28 August 2000.

Where does our *Acesta* fit into all this you may well ask? Have I digressed too far – indulging my long-standing interest in deepwater corals? Not at all- *Acesta* is an integral part of these very special underwater habitats. Knowledge of the distribution, biology, ecology, and habits of our two local species of *Acesta* will go quite a way towards trying to understand the significance (and need for protection) of coral banks and seamounts in New Zealand waters.

The volume which has stimulated my remarks here is scheduled to appear early next year, 2001, as Vol. 185 of the series *Mémoires du Muséum National d'Histoire Naturelle*. Its cost will be 440 F which equates to about NZ$150 – not cheap reading. But it will be worth every cent judging by the earlier volumes, and, if you really want to see it, the Hector Library at Te Papa has been taking the series for years. Anyway, something special to look forward too – thanks again, Bruce. I also thank Bruce for his kindness in showing me a preprint of his paper. Many thanks also to my friend John Yaldwyn for pointing out embarassing errors in an earlier print of this article.

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-oOo-

FOR THOSE NOT MAD ABOUT MUSSELS

"But four young Oysters hurried up,
  All eager for the treat:
Their coats were brushed, their faces washed,
  Their shoes were clean and neat –
And this was very odd, because, you know,
  They hadn't any feet.
...
And all the little oysters stood
  And waited in a row.
...
"A loaf of bread,' the Walrus said,
  'Is what we chiefly need:
Pepper and vinegar besides
  Are very good indeed –
Now if you're ready, Oysters dear,
  We can begin to feed.'
'But not us!' the Oysters cried,
Turning a little blue ...'
...
'I weep for you.' The Walrus said:
  'I deeply sympathize.'
With sobs and tears he sorted out
  Those of the largest size,
Holding his pocket-handkerchief
  Before his streaming eyes.
But answer came there none –
  And this was scarcely odd because
They'd eaten everyone."

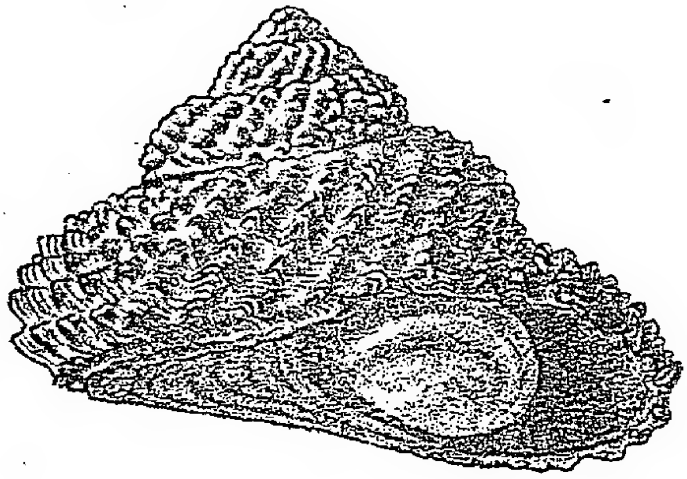
From - *Through the Looking-Glass.* 'The Walrus and the Carpenter.' Tweedledee's 'long' poem
By Lewis Carroll [Charles Lutwidge Dodgson, 1832-1898].

I don't know about you – but I always felt very sorry for those poor little blue oysters, a pathetic quartette of innocent bivalves, awaiting what they thought would be a good feed, only to find that they were 'the object of the exercise.' Nevermind, I like oysters, too, as gastronomic delights. Too bad they're now so expensive ... Have you got past the recipes for mussels yet ? Well, maybe you're an oyster-fancier rather than mad about mussels, so here's a couple of Ostreidae delights for you to try –

Ostrea Soup - 1½ dozen fresh or frozen oysters, 1½ oz butter, ¾ flour, 1½ pints of milk, some grated nutmeg, pepper & salt to taste, chopped parsley or a touch of paprika, and whipped cream if you want to risk your cholesterol once more. Clean the beardy bits off the oysters and cook them for about 5 minutes quite gently in the butter. Add the flour, not making it lumpy at all, then add in the milk, half a cup at a time, stirring well and bringing to the boil each time after you've added some milk. Strain the soup through a sieve to remove the beards and add a little grated nutmeg, with salt and pepper to taste. Now add the oysters, whole or cut up as you prefer; re-heat the soup just before you serve it, but don't let it boil – just keep it simmering until you're ready. Put a large (?) blob of the whipped cream on each serving with a bit of parsley or a sprinkling of paprika.

My favourite is 'Angels on Horseback.' Here's how to make a dozen ...
Roll some fresh oysters in bacon and stick them under the grill for 10 minutes before you need them. Try 12 oysters to 4 rashers of thin streaky bacon cut into 75 mm lengths (that's 3 old inches); wrap each strip around an oyster and pin together with a tooth-pick. Drop some butter or oil over it if you like, or if the bacon is a bit lean, grill, turning it over once, for 6 to 8 minutes with the tray about 100 mm (old 4 inches) below the element, you could bake them in a fairly hot oven (about 250°C) for 10 to 15 minutes without having to turn them. Rather scrumptious !

WELLINGTON SHELL CLUB



Do you enjoy picking up shells on the beach ?
Would you like to learn more about them ?

If you are interested, ring

MR PAUL 331669

From "the archives" ...
OUR 1980 POSTER – IT BROUGHT IN A FEW NEW MEMBERS !

THE NEWSLETTER AND ME

By Jill Burnet

Twenty-one years of writing, typing, drawing, erasing, licking and sticking – our Newsletter is 21, and 21 years of club history are recorded in it. The story of the club's first 21 years, 1955-1976, is told by Bill Paul in his article "We are grown up" in *Cookia*, Vol. 1, No. 2, pp 31-34. Since the world hasn't come to an end, or even ground to an electronic halt, the year 2000 seems to be a good time to look back on the good old days of the last 21 years, and it's all there in 21 years of newsletters. The club actually tried to start the newsletter in 1978 – there were three issues, advertising the meetings a field trip to Days Bay, and library acquisitions, and then it seems to have petered out. And so it was in 1979, with Essie Fisher as its editor, that the newsletter really got underway – 11 issues a year, coming out a week before each meeting, for 21 years. And there is another very, very good reason for starting in 1979.

1. 1979

The year I joined the club - a year to remember, for me at any rate! And I do remember my first meeting. John Marston was just finishing up a term as Secretary; he was my first club contact and gave me very clear directions on how to find the venue. In those days the club met in the Royal Society Room in the old National Museum in Buckle Street. Betty Andrews was the President, and meetings were conducted in a fairly formal manner, partly, I think, because of the formal layout of the room, which had a long table in front where the President and Secretary sat, and rows of seating facing it where the rest of us sat. The numbers were quite small, only about 10 or 12 people, and I slipped unobtrusively into a back row. The formal business was followed by a "5 minute spot", which was a 5 minute talk by a club member. Then came an identification session - at every meeting I had a handful of shells I wanted names for, mostly very common ones, I'm afraid. The main feature of the evening was a talk by a guest speaker - that year we had talks from Bill Paul, Frank Climo, Ken Grange, Alan Beu, and Alan Baker, a lot of which went right over my head. I wish I could remember more of them. The meetings finished with tea, coffee, and biscuits organised by Meg and Norm Taylor. Mary Agnes Wotton ran a sales and exchange table, and Claire Clark opened up the library. This was a chance for everyone to move around and socialise. I remember being very over-awed when Bill Paul came up to me at that first meeting and asked me what my particular interests were. For two meetings we had members' nights when, in place of a guest speaker, everyone took along something to talk about in turn. I just took shells to get identified. Two members invited us to their homes during the year to see their collections: Bill Paul had a wonderful collection of Australian shells, and I loved Betty Wolf's cottage style kitchen and her great array of Toby jugs as well as being impressed by her extensive collection. At the beginning of April, there was a field trip to Eastbourne, an account of which is in *Cookia*, Volume 3, No. 2, pp 18-19. Several members wrote snippets for the newsletter about their collecting experiences on their holidays: Claire and Tom Clark went to Honiara in the Solomon Islands, Jean Boswell

went round Northland, and Meg and Norm Taylor had a trip to Penang. During the year Essie Fisher retired from the position of Newsletter Editor because of ill health, and Betty Wolf took over, and Rod Sudlow who joined the club at the same time as I did, took on the secretary'-treasurer's job. With these changes, the same committee was re-elected for 1980. The AGM was held in our usual venue, but was made special by a slide show after the formal business. Bill Paul had slides of Australian animals, and Mollie Logan contributed slides of West Australia. We finished up with a bring-a-plate supper - Betty Andrews always brought wine, so I don't think I got any shells identified that month!

2. 1980

The January 1980 Newsletter contains a plea from the Editor, Bill Paul, for articles for *Cookia*, suggesting that members write up their holiday experiences. An even more impassioned plea for material appears in the February Newsletter - nothing changes! At the beginning of the year there was a drive for new members and a poster was produced for us all to put up on notice boards wherever we could, and perhaps it was this that brought Margaret Francis and her father along to the club in April. For me, the highlight of the year was the fossil and land snail trip to Wanganui at Anzac weekend. This was great fun, and I still treasure fossils from the cliffs and shells I picked up off the beach. One afternoon we visited Betty Andrews and admired her collection of shells, as well as her garden with its camomile lawn and snail creeper We spent Saturday evening around the long table in the shearers' quarters cleaning up fossils and trying to put names to them. The keen landsnailers disappeared off into the bush at odd times and collected quantities of leaf litter to sift through. The weather was good, and we were all very grateful to Betty Andrews for arranging the accomodation. Unfortunately, there was no record kept of this trip. I was still too new to launch into print, and nobody else wrote anything either - no wonder the Editor was short of material. (There is an account of a 1970 trip in *Bulletins* 22, 23, and 25.) The other special event of the year was the club's 25th anniversary at Betty Wolf's home on Saturday 24 May 1980. Members were asked to bring shirt box displays of Veneridae and Trochidae, there was a 'pin the operculum on the shell' game, Betty Andrews made up one of her famous stories incorporating club members' names - the first of these that I remember - and everyone won a prize, a wrapped shell, for something. Needless to say, there was a good supper. We were really keen that month, as we had our usual Thursday night meeting two days before the party. Our guest speakers during the year were Richard Willan, Alan Beu, Frank Climo, Ken Grange, and Dick Dell. I got more out of the talks this year, and even remember some of them - Ken Grange's spectacular slides of diving in Fiordland, Dick Dell's amusing anecdotes of how he started shell collecting as a boy. Alan Beu spoke about his trip round overseas museums, but I seem to remember that he helped those of us who were still stuck with naming our fossils from the Wanganui trip. For one of our meetings we visited the Palaeontology section of Victoria University, and for another we went to the Fisheries Research Division shellfish hatchery at Mahanga Bay, where Peter Redfearn showed us over the hatchery and talked about the research work on mussels, oysters, paua, and crayfish - a very interesting evening. In September there was a successful field trip to Island Bay, on a Saturday morning, finishing up with a picnic lunch. There is a note of what was collected in *Cookia* Vol. 4, No. 2, p. 14. However, in spite of all this activity,

by the end of the year the club was at a low ebb. In the October newsletter, it was announced that a new president, vice president, secretary-treasurer, librarian, and newsletter typist were needed for the following year. In addition, the futures of both *Cookia* and the *Newsletter* were in doubt, partly because of costs, and the problem of getting them typed - both were stencilled at the time. And, as well, the Editor was having great difficulty getting articles for *Cookia* - I well remember Bill Paul complaining at meetings that people thought "editor" also meant "sole author." The club had been relying very heavily on Frank Climo and Alan Beu both for talks at the meetings and for articles for the early issues of *Cookia*. This could not continue. Could the club members carry on?

3. 1981

An auspicious start to 1981 - Dick Dell was awarded the Queen's Service Order in the New Year's Honours List. Bowen Francis stepped into the breach as club president - Bowen was not a shell collector himself, but he brought his daughter Margaret along to meetings. Barbara Sutherland took over the Secretary-Treasurer's job, Jill Griffiths replaced Claire Clark as vice president, and I found myself the librarian – I see now that I was a very inadequate librarian in comparison with several very efficient librarians we have had since then. There had been lengthy discussion of the club finances at the AGM the previous November, and it was decided to raise the annual subscription from $5 to $7 for single members, from $6 to $8 for families, and from $3 to $5 for students and superannuitants. *Cookia*, thank goodness, was to continue, with some help from the museum with typing, and the Editor, Bill Paul, was again calling for articles. The Newsletter was also to continue, with Betty Wolf as editor and "a new arrangement for typing." That was me. I can remember saying very firmly to Bill Paul that I couldn't (i.e. wouldn't) cut stencils, but I could type and photocopy the Newsletter. I think he was a little startled by the idea, but nothing better offered. In 1981, stencils were, in my opinion, definitely a dying art form and not to be encouraged. Early in the year, we had a very eminent speaker, Alan Solem from Chicago, USA, who gave us a talk on the habits of land snails in the outback of Australia - even I found it interesting to hear how the snails had adapted to life in a very dry region. Other guest speakers were Bill Paul who talked about New Zealand conchologists, Frank Climo who told us how lucky and exceptional New Zealand was in its land snail fauna, Alan Beu explained the binomial system of naming shells, Dick Dell gave us a wonderful talk on shells of Antarctica - I can still remember the thrill of seeing those thin, fragile, white shells from the white south. And Ken Grange told us about a diving trip off Northland in the research ship *Tangaroa*, illustrated with his beautiful slides. One advantage of the old Royal Society room was that it had the facilities for showing slides. Two meetings were held away from the museum, at the homes of Bowen Francis and Bill Paul. During the year, the identification session was changed to a "Focus" on a particular family. Members said that they found it difficult to put names to shells at the drop of an operculum, but if one family was chosen in advance, they could bring along all their shells from that family to help those who were struggling with sorting out the species. We started with looking at *Siphonaria*, then *Diloma*, *Buccinulum*, and *Chlamys*. Looking back at those newsletters, I can see that I used it as an excuse to do pretty drawings of the appropriate shells to fill

up the space. No wonder I didn't want to cut stencils - have you ever tried to produce any sort of drawing with those Gestetner stencils? In the middle of the year, Betty Wolf had to give up being Newsletter Editor because of ill health, so I ended up both writing and typing it, and here I still am! We don't seem to have had any field trips during the year, but members still got around. Meg Taylor wrote an account of shelling at Pukerua Bay, and in June she sent us a long letter about her trip round Northland. Betty Wolf told us about her trip to New South Wales, and her holiday in Stewart Island with Betty Andrews. At the end of the year a club trip to Eastbourne was being organised and trips to Kapiti Island for early 1982. In March, our previous secretary, Rod Sudlow, visited us from Auckland, and in August a momentous event occurred which I can't honestly say that I remember - we welcomed new members Eric Scott and Pat Lakeman. Both are still members of the club, and Pat is now a prize-winning exhibit - or do I mean exhibitor? The AGM was held in the Royal Society Room for the last time, with formal business followed by a members' evening, and supper. I notice that everyone was asked to bring a plate. The previous year "lady members" had been requested to bring a plate. The Shell Club really was moving with the times!

4. 1982

This year saw the club really pick up. We started off in a much sounder financial position, and the subscriptions remained the same as the previous year. We began the year without a President, as Bowen Francis did not wish to continue, although he chaired the first few meetings of the year since we had not been able to fill the position at the 1981 AGM. Barbara Sutherland continued as Secretary-Treasurer, Mary Agnes Wotton continued to run the trading table as well as taking over from Jill Griffiths as Vice President, Meg and Norm Taylor still looked after the important job of supper conveners, and I gladly relinquished the position of Librarian to Jenny Raven who had started coming more regularly to meetings since Eric Scott and Pat Lakeman had joined. At the beginning of the year Peter Jamieson joined the club, full of enthusiasm and ideas for field trips, and in April he was elected President. Our main problems this year were with the accommodation, as the old Royal Society Room was being converted into smaller rooms and was not available for the first few months, so we did not have access to the trading table or library. Bowen Francis hosted a meeting at his home, we had two meetings at the new premises of the Oceanographic Institute at Greta Point, where Ken Grange showed us over the buildings and told us about his trip to Palmerston Atoll. For one meeting we used the museum lecture theatre and had a discussion of the shells found on Kapiti Island field trips. The results of these trips are recorded in *Cookia* Vol. 5, No. 1, pp 4-5. We met in the new Students' Room at the museum for the first time in May, and found it very cosy, in fact rather cramped if we had a large attendance at meetings, and not suitable to use for our AGMs. However, having all the members sitting around one big table made the meetings a bit more informal and friendly, and it was good to get at our library and trading table again. A few months later the museum became more security conscious, and decreed that we all had to be out of the building by 9.00 pm. As this cut down our meeting time, we moved the starting time foward to 7.00 pm instead of 7.30 pm. We also saved time on supper, as there were no tea-making facilities in the new room, and our supper conveners became redundant after many years of much appreciated

service. Our first guest speaker in our new room was Alan Beu, who gave us a talk about the Wanganui fossil beds, which was a good follow up to the field trip to Castlecliff at the beginning of May. Then Bill Paul told us how an octopus extracts its victim from a cowrie shell, Kath Walker and Graeme Elliott from the Wildlife Division talked about their work on *Paryphanta*, Frank Climo told us about his work on the Punctidae, and we had a microscope evening. We went to the Oceanographic Institute again in August where Joyce Richardson gave us a talk on brachiopods. Our "Focus" sessions continued, the families often being chosen to fit in with our guest speaker's topic, so that during the year we looked at fossils, land snails, and brachiopods, as well as *Neoguraleus* and Mitridae, *Amalda, Diplodonta* and Tellinidae, and *Xymene* and *Paratrophon*. There were several field trips during the year - early in the year we went to Kapiti Island, in May we had a weekend at Castlecliff, a weekend at Castlepoint in August, and, at Queen's Birthday, a trip to Kaikoura. It started off with a terrible ferry crossing, but after we recovered from that we had a great time, collecting at Marfell's Beach on the way, some quick stops for land snail collecting, and two wonderful days scrambling over the Kaikoura Peninsula under the guidance of Beverley Elliott. Jenny Raven wrote a good account of this in *Cookia* Vol. 5, No. 2 pp 27-28. Both Betty Andrews and Meg Taylor had holidays in Australia and brought along the shells they found to show us, as did Peter Jamieson after his trip to Northland. Rod Sudlow, our ex-secretary, wrote to us with news of his shell hunting in Auckland. It was good to see Ed Busby coming back to meetings during the year, and at the end of the year Gracie Davies and Hugo Hollis joined us. Before the AGM, Bill Paul announced that he was retiring from the position of Editor, which he had held since 1979, regularly producing issues of *Cookia* in spite of difficulties with finance and obtaining contributions. We branched out with the AGM, which was held at the home of Betty Wolf, and ran a raffle and a shell auction to raise funds for a club microscope. Ken Grange was an excellent auctioneer, Peter Jamieson put a lot of work into preparation, and we were very pleased with the results. We had volunteers (willing or unwilling) for all the committee positions, EVERYONE brought a plate for supper, husbands, wives, family and friends were invited and it was a great social evening.

5. 1983

Our new Editor was Ken Grange, and there was a bit of a re-shuffle of some of the other committee positions. Jenny Raven became Vice President, Eric Scott replaced Barbara Sutherland as Secretary-Treasurer, and Barbara took over the exchange table, while Bruce Hazelwood was our new Librarian. Bill Paul was retained on the committee for museum liaison. Subscription rates remained the same, the microscope was bought with the proceeds of the 1982 AGM auction and we saw it at the March meeting. This was the year we started running our monthly raffles - these have been a source of income and interest at every meeting since then. We started the year with an informal meeting at Jenny Raven's home in Brooklyn, and were pleased to have a new member, Don Watson, join us. We went twice to the Oceanographic Institute for talks from Ken Grange - at one he showed us the holotype of *Pterotrochus tangaroae*, a real thrill. Frank Climo told us about the methods of collecting land snails, and there was a fascinating talk from Dick Dell about his work on three deepwater mussels. As well as our tame experts, several

club members provided talks during the year - Mr Deardon spoke about shells in classical art, a most unusual but interesting topic, Peter Jamieson and Jenny Raven told us about a collecting trip to the far north, Bruce Hazelwood's subject was volutes - he passed around tray after tray of magnificent specimens, and Peter Jamieson did likewise with cones. So the "Focus" subjects during the year included volutes, cones, land snails, as well as Mactridae and *Buccinulum*. Our good field trips continued, the most memorable of which was the trip to Mahia at Easter. I can remember spending the days driving all over Mahia Peninsula on very rough narrow winding roads to get to the beaches, climbing over fences, Peter Jamieson standing on Eric Scott's shoulders to try to get at limpets on the roof of a cave - the very best ones were, of course, just out of reach - and spending the evenings listening to Peter giving us readings from Powell. We produced a long list of the shells we found at the different beaches, which is included in Eric Scott's article in *Cookia* Vol. 5, No. 3, pp 27-38. Less spectacular, but still rewarding, was a day trip to Island Bay, there was a day trip to Marfell's Beach, and Frank Climo led a snailing expedition up Colonial Knob as a follow up to his talk in September. The results of this are recorded in *Cookia* Vol. 5, No. 4, pp 36-37. Meg Taylor had a trip to Samoa, and showed us the lovely shells she found at the October meeting, we heard that Claire Clark had had a baby son, and welcomed another new member, Mike Meads, at the June meeting. The AGM was held in Pat Lakeman's lovely large living room; there was a good raffle, with an unexpected extra prize - a photograph of a shell generously donated by Ken Grange, a lucky dip - bring a wrapped shell to participate, and shells for sale. Everyone brought far too much food for supper, and there was wine provided from the proceeds of the monthly raffles - so that was why we instituted the raffles!

6. 1984

This year, we had the same committee as in 1983, so obviously the club was satisfied with its officers - or, at least, couldn't think of anyone better. Early in the year, there were two trips to Kapiti Island. We had fine weather for both, and the one I went on was very enjoyable. There was no write-up in *Cookia* of these trips, so presumably no new shells were found. By this time, club members were writing more articles for *Cookia* - accounts of trips and holidays which previously would have appeared as brief tit-bits in the newsletter were being developed into more detailed articles for *Cookia*. One club trip which was written up was the Waitangi Day trip, a walk from Eastbourne towards Pencarrow - see *Cookia* Vol. 5, No. 4, pp 38-39. At Easter, three landsnail enthusiasts went to Karamea to survey the Powelliphantas, and they told us about the destruction of the habitat of *Paryphanta rotella* at the April meeting. In October, there was a more local land snail field trip to Karori, led by Frank Climo. This was a follow up to Frank's talk on the classification of punctid land snails at the September meeting. Other guest speakers during the year were Alan Beu, who talked about the New Zealand Ranellidae, Mary Agnes Wotton with a very interesting talk on limpets, and Peter Jamieson who showed us how to clean shells, what cleaning aids and equipment he used, and examples of "before" and "after" specimens. We had a members' evening, and an identification evening with Bruce Marshall. We visited the Oceanographic Institute twice for talks by Ken Grange, one a very practical demonstration on how to photograph shells, and the other a slide show of deep water shells. Mike and Barbara Meads invited us to their home

in Belmont, for a fascinating talk and slide show on Mike's trip to the Galapagos Islands and the Amazon jungle. Five minute spots were re-introduced at the meetings, replacing the "'Focus" sessions of the previous years. Mary Agnes Wotton, Eric Scott, Jenny Raven, Peter Jamieson, Barbara Sutherland, and Don Watson all contributed to our meetings with interesting five minute talks. Bob and Betty Grange from the far north contributed by coming to our July meeting - it's always lovely to see our postal members. Harry Tibble, who was too busy with his restaurant at this time to attend meetings regularly, put in an appearance, and Claire Clark visited us with some shells from the Solomon Islands in October. In September, Peter Jamieson and Eric Scott went up to Auckland for the Shell Show and won prizes with all their exhibits. And to round the year off, we organised a great AGM for November, on a Saturday evening, and the first one held at the Post Office Training Centre in Upper Hutt, thanks to Barbara Sutherland. There was a lavish catered meal, and the club was doing so well that the very reasonable cost was subsidised for members. Peter Jamieson set up his prize - winning exhibit of cones for us to admire, there were shells for sale, an auction, one of Betty Andrews' competitions, lucky dips, a raffle, supper - more food, and somewhere amongst all the fun and games, there was a meeting, allocated only half an hour on the evening's schedule. It set a standard for future AGMs.

7. 1985

Once again, the same willing people were running the club. The only new committee member was Hugo Hollis who took over from Jenny Raven as Vice President, and Jenny took back the librarian's job from Bruce Hazelwood. The subscription, for some extraordinary reason, was reduced from $7 to $5 for single members, and from $8 to $6 for families - we must have had more money than we knew what to do with, and obviously some of the present club members (who shall remain nameless) weren't around then. This year saw the start of a great club tradition - the annual barbeque. It happened that in April the 4th Thursday fell on Anzac Day, and Gracie and Trevor Davies offered to host the meeting, and a barbeque tea, in their lovely garden at Paraparaumu Beach - and it proved very successful! In the afternoon, a group of us wandered along the beach in the sunshine, talking and idly looking for shells - some lucky person found a *Globisinum drewi*. A contingent of landsnail enthusiasts headed for the hills, braving rain and electric fences - Eric and Heather Scott took along their two little girls, and Pamela informed me later that they had been in a very wet muddy place. So much for landsnailing. And, would you believe it, Eric, our efficient Secretary, set off on this expedition without the minute book! We all converged on Gracie and Trevor Davies' home for a wonderful barbeque tea, masses of food, lovely garden, flowers, trees and a garden swing, and afterwards crammed into their living room for a meeting. We also had meetings at the homes of Jenny Raven in Brooklyn, and Mike and Barbara Meads in Belmont. We twice visited the Oceanographic Institute at Greta Point, and Ken Grange gave us a very interesting talk on black coral. Other guest speakers during the year were Peter Jamieson on those amazing shells, the Pleurotomariidae, Eric Scott on Strombidae, Hugo Hollis on Muricidae, and Dick Dell on Antarctic molluscs. We had a members' evening, a slide show, Bruce Marshall showed us the museum collection in June, and so the year went round. Betty Wolf visited us from Australia in May, Ian Cooksley joined us

in August, and Derek Crosbie from the Whangarei Club came to the meeting in October. A trip to Kapiti Island was arranged for November, and at the end of November it was AGM time again. We decided that the previous year's event at the Post Office Training Centre had been such a success that we would repeat - or even surpass it. The cost of the meal was again subsidised for members. The auction ran to 31 New Zealand and 17 Foreign lots, with Graham Aamodt a great auctioneer, Betty Andrews produced another competition, there was a raffle, and Peter Jamieson and Hugo Hollis brought along displays of exquisite cone and murex shells for us to drool over. It was a fitting finale to the club's 30th year.

8. 1986

At the beginning of 1986, we heard that Jean Boswell had died. She had been one of our members who regularly travelled the distance from Wanganui to attend meetings for many years. And we had a few changes to the committee, as Eric Scott, who had been Secretary-Treasurer since 1983, moved up to Northland. Barbara Sutherland took on the job again, Jenny Raven replaced Barbara on the trading table, and Pat Lakeman became the new Librarian, and set to work to organise and catalogue the club library with great efficiency. She still remembers having to find the missing copy of Powell. The subscriptions remained at the rate of $5 introduced the previous year. We started the year with a meeting at Pat Lakeman's home, and in February, Trevor and Gracie Davies invited us up to their place for another barbeque, this time on a Saturday. At Easter, there was a trip to Kaikoura, with a stop at Marfell's Beach on the way. This was an enjoyable and profitable trip, unfortunately not recorded for *Cookia*, but we heard all about it at the next meeting. Meg Taylor and Jenny Raven both visited Stewart Island, and told us about their trips at the April meeting. This was the last we heard from Jenny for a while as she packed her bags and set off for Britain. What happened to the trading table? I can't remember. In May, we had a meeting at the Oceanographic Institute, where Ken Grange gave us a talk, complete with his beautiful slides, on the shells of Fiordland. At the next meeting Hugo Hollis and Peter Jamieson also had some magnificent slides, of their trip to California and the collections they saw there. Hugo went all that way to buy a New Zealand shell! Betty Andrews tripped across the Tasman and brought back welcome news about Betty Wolf. We heard about another trip in August - Meg Taylor and Gracie Davies gave us a lively account of their adventures in Tonga. Our very illustrious speaker in July was Sir Charles Fleming, who told us about the scientific aims of Cook's voyages, and showed us a set of Martyn's exquisite drawings of New Zealand shells. About this time, Bruce Hazelwood moved to Auckland, another member who had contributed a lot to meetings, so it was just as well that Ian Townsend joined us, bringing along his son Andrew. The September meeting was a members' evening with everyone bringing something to show or talk about, and in October we visited the new Natural History Unit in Taranaki Street, where Bruce Marshall gave us a guided tour of the building, and showed us some of the mollusc collection, more comfortably housed than in the basement at Buckle Street. The AGM was once again held at the Post Office Training Centre, with a catered meal, and featured a slide show organised by Hugo Hollis and Alan Sadd, which followed the meeting. There was a plea for fresh faces on the committee as a new Secretary-Treasurer and President were needed. Who could be persuaded to fill the gaps?

9. 1987

Some new faces on the Committee – at last. Ed Busby was our new President, with Anita Long as Secretary, and Peter Jamieson Vice-President. Jenny Raven must have returned from England, as she was appointed Treasurer, and Meg Taylor took over the trading table. The subscriptions remained the same. We had news in the January newsletter that Mr R.V. Roberts, one of the foundation members of the club, had died. The February meeting was again held on a Saturday, with an enjoyable field trip to Pukerua Bay, where we fossicked among the rock pools. From there, it was on to Trevor and Gracie Davies' place for a barbeque tea in their lovely, sunny garden, followed by a short meeting – another great day. At Easter, there was a field trip to Picton, which was used as a base for visits to Marfell's Beach, Puzzle Peak, Mt Sewell and Bluemine Island. Peter Jamieson, Jenny Raven, and Barbara Sutherland gave us a 5-minute talk about it at the April meeting, but unfortunately there was no write-up for *Cookia*. In fact, the Editor's pleas for articles must have gone quite unheeded, as at this time there was a long gap between issues of *Cookia*. Our guest speakers during the year were Ken Grange who told us about his work on black coral and Jacques Cousteau's visit to New Zealand, Frank Climo who talked about punctid landsnails and swept us into the realms of panbiogeography, Peter Jamieson showed us the different species of New Zealand Pectinidae, Dick Dell gave us insights into the lives and careers of the conchologists who have named New Zealand shells, Pat Lakeman answered the question 'What is in the Club Library?' , and Meg Taylor, Betty Andrews, and Gracie Davies gave us an account of their trip to Tonga. They wrote this up, with a long list of the shells they found, and it appeared in *Cookia* 6 (2), pp 6-8. The Five Minute Spot was re-introduced at the meetings this year, and produced some interesting speakers: Gracie Davies on *Xenophora*, Hugo Hollis on *Pterynotus*, Don Watson about his holiday in the Marlborough Sounds. Peter Jamieson showed us the difference between *Maurea punctulata* and *Maurea osbornei*, and Anita Long showed us keyhole limpets from South Africa. There was a members' evening, when everyone had a chance to speak, and we visited the Natural History Unit for an identification evening with Bruce Marshall and the museum collection. In August, we welcomed a new member, John Nunn. In September, Ed Busby attended Charles Fleming's funeral on behalf of the club, and at the October meeting we said farewell to Peter Jamieson who was off overseas. The AGM in November was another evening of food, fun, and friendliness once again arranged by Barbara Sutherland at the Post Office Training Centre in Upper Hutt. There was an auction, with 52 lots on the list circulated with the Newsletter, postal bids were accepted, and the auctioneer, Jenny Raven, made sure that everyone bought something.

10. 1988.

We started the year with only one change to the committee – Don Watson replaced Peter Jamieson as Vice President. The subscriptions remained the same, Pat Lakeman was again (or still) searching for the missing Powell, and Ken Grange was pleading for articles for *Cookia* – some things don't change. Once again we visited Gracie and Trevor Davies for a barbeque tea and meting, preceded by an outing to Pukerua Bay, this time in

March. Our guest speakers during the year were Alan Beu whose talk covered just the last 65 million years, Frank Climo pursued the distribution pattern of land snails, Ed Busby gave us a very interesting talk on the history of the Shell Oil Company, and Dick Dell explained the problems involved in classifying shells. We visited the Oceanographic Institute twice for talks by Ken Grange who told us more about his research on black coral, and by Elliot Dawson who told us about Macquarie Island – I think that this was the start of Elliot's deeper involvement with the Club – I hope he doesn't regret it. He has since told me that he first came across the Club in the mid-60's when he was asked to give members an evening showing off the collections at the old oceanographic premises in Thorndon Quay – but was kept away from more involvement then by his frequent cruises to remote places.. We had a members' evening, and an evening at the Natural History Unit with Bruce Marshall, browsing through the museum collection. Early in the year, there were two 5-minute spot talks – Pat Lakeman on the scallop industry, and Ian Cooksley on freshwater snails. These were then discontinued, I think to save time for the guest speakers. In May we had change of secretary – John Nunn tok over from Anita Long who was expecting a baby, and we heard that Claire Clark was expecting her second. At this time Jenny Raven and Pat Lakeman were both studying hard and passing lots of exams, Ed Busby after many years of hard work, launched his boat, Trevor and Gracie Davies had a trip to Canada, Barbara.Sutherland had a holiday in Hong Kong, and Hugo Hollis kept us up to date with Peter Jamieson's whereabouts. Hugo went up to the Auckland Shell Show in September, and was very successful with his exhibits. And in September we were looking for a new venue for the AGM, as the Post Office Training Centre which we had used since 1984 was no longer available, and I was looking for someone to take over the newsletter. Deregulation had wiped out my job, and I was spending my time shredding files, with less and less office facilities – not that I did the newsletter in office time, of course, but it was handy to have a typewriter, a photocopier, an endless supply of twink. Ed Busby came up with the Lowry Bay Yacht Club for the AGM venue, Pat Lakeman arranged a firm of caterers who brought in a very good meal, Jenny Raven organised an auction and a sales table, and we were delighted to have Anita and Andrew Long come along with their new baby – he got almost as much attention as the shells.

11. 1989

We added a raffle organiser to the committee in 1989 – Gracie Davies. Otherwise the committee was the same as the previous year, but subscriptions were raised by $1, to $5 for students and superannuitants, $6 for single members and $7 for families. In February, we again descended upon Gracie and Trevor Davies for a barbeque in their garden, followed by a meeting at which John Marston spoke about *Dosinia*. In March, Alan Beu gave us a talk at the National Museum about fossils. This was our last meeting at the National Museum; we had been finding the room there very cramped and inadequate, and Pat Lakeman arranged for us to use the staff meting room at the Natural History Unit in Taranaki Street. We found this more spacious with plenty of room for the library cupboard and handy tea-making facilities. Either Bruce Marshall or Frank Climo very kindly gave up an evening to let us in and out of the building, and this arrangement continued for the 10 years we used the Taranaki Street premises, and Bruce is still

opening the door for us at the new premises in Tory Street – we really appreciate his help. Don Watson gave the talk at our first meeting in the Taranaki Street premises, on diving in the Marlborough Sounds. At following meetings, Frank Climo spoke about land snails, Hugo Hollis told us about his trip to the Philippines, Dick Dell talked about National Parks and the greenhouse effect, and we visited the Oceanographic Institute for a talk by Dennis Gordon on bryozoans. We gained some valuable new members during the year – Judy Hardie at the beginning of the year, and in June, Bev and Barbara Dunn. Ken Grange at last had enough articles to produce an issue of *Cookia*, and Hugo Hollis passed on news of Peter Jamieson's travels. I was made officially redundant during the year, as I had expected, and since then several kind people have helped out with photocopying the newsletter, but, for some strange reason, no one seems to want to take on the writing, typing, drawing, erasing, licking and sticking – funny that. At the end of the year, there was a field trip to Marfell's Beach, and, of course, the AGM was again held at the Lowry Bay Yacht Club, with a catered meal (subsidised for members) brought in, a raffle, a lucky dip and a sales table. After three years of service Ed Busby resigned – who was the new president? Which treasurer raised the subscription rates, again? Why was the night of the AGM so very wet, wild and windy?

Pay your subscriptions and find out all this and more in the next issue of Cookia. We had originally intended to have the whole article in this issue – which had to come out in the year 2000 as is right and proper – but both Elliot and I ran out of time – I was busy doing the newsletter, financial statement, raffle prizes etc. etc. for the AGM. I don't know what Elliot's story is.* So – next time, what happened in the "naughty nineties" (so far as the Wellington Shell Club) was concerned …

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* Note from the editor!
Elliot's excuse is that he'd love to have members giving their contributions for Cookia to him very much earlier in the year so that he might be able to get it out by his birthday, at least. Better luck next year?

BOOK REVIEW

Sharon Pirika, 1999: *No Ordinary Place. The Chatham Islands.* Cosmos Publications, Greenmeadows, Napier. Paperback edition (ISBN 0-908887-25-6), hardback limited edition of 500 copies (ISBN 0-908887-26-4), 96 p, illus. $29.95 (obtainable, post free, from Exisle Publishing Ltd, P O Box 8077, Symonds St, Auckland - freepost 59233).

This is a most extraordinary book - or, at least, the photographs in it are - exquisite, beautiful, even romantic, and certainly hauntingly-nostalgic for those who know and love the Chatham Islands. We of the Wellington Shell Club have, I guess, a vested interest in the Chathams - at least in its shells, but really a lot more besides. Two of us, Patron and Editor, went there on the Chathams 1954 Expedition, and other members have followed up in the intervening years. This is a book to delight us all (whether we've been to the Chathams or not) and will be especially useful to offer to our friends in token of why we travellers have been so captivated by these islands, their history, geography, wildlife and people.

Sharon Pirika, whose photographs and brief but exciting text make up the book, is a fourth-generation Chatham Islander, raised on the Chathams with her older sister, 19 cats, 2 dogs, and a goat, so her biographical introduction states. She went to high school in Nelson for two years, then returned home to find a job. The introduction says this is "where her real life education began. With a variety of different experiences ranging from a shed, deck and factory hand in the fishing industry, to a photo laboratory technician, obtaining a Diploma in Makeup Artistry and finally becoming a freelance photographer which enables her to express her talents to the full." Sharon shows herself on the next page with her camera - and, then, page after page of striking photographs as evidence of her creative art in seeing the Chatham landscape and their people. She tells us – "To be able to express my home place through a passion for photography and to have it published and distributed nationwide is beyond my normal emotions." Our normal emotions, for our part, are stimulated and extended by her efforts. She gives a number of quotable thoughts such as – "If you haven't been there, you can only imagine the significance of this extraordinary place; the way people live and relate to the importance of common things, the raw unspoiled natural backdrops and the observable effects of history" and "No Ordinary Place is inspired by the emotional and physical uniqueness of the Chatham Islands ..." and "The patience and endurance of this isolated land make it difficult to define emotionally the Chatham Islands - words can only confine."

Don't just take my word for it that this an exciting and enjoyable book - get it, enjoy it, give it to people, and, most of all, treasure it and its sentiments as I do! Value for money, these days? For my part, at a price of near enough to $30, the images in this book do more for me than any old McCahon painting at $1 million or so. Photography as an interpretive art form, especially for expressing a landscape (as McCahon has done also, in his own way, in his paintings) is worthy of better recognition. Thank you for sharing this with us, Sharon.

Elliot Dawson